APR/FY06

FORT HAMILTON

New York

Army Defense Environmental Restoration Program Installation Action Plan

Final 8 September 2006

Table of Contents

Table of Contents 1
Statement of Purpose 2
Acronyms 3
Installation Information 4
Cleanup Program Summary 5

Military Munitions Response Program 7

Summary 8
Contamination Assessment 9
MMRP Active Sites 10
Previous Studies 13

MMRP Site Descriptions 14
FTHM-001-R-01 15
FTHM-002-R-01 16
FTHM-003-R-01 17
FTHM-004-R-01 18
FTHM-005-R-01 19

MMRP Schedule 20
MMRP Costs 21
Community Involvement 22

Statement of Purpose

The purpose of the Installation Action Plan (IAP) is to outline the total multi-year Cleanup Program for an installation. The plan identifies environmental cleanup requirements at each site or area of concern, and proposes a comprehensive, installation-wide approach, with associated costs and schedules, to conduct investigations and necessary remedial actions.

In an effort to coordinate planning information between the restoration manager, US Army Environmental Center (USAEC), Fort Hamilton, NGB/IMA/MSC, executing agencies, regulatory agencies, an IAP was completed. The IAP is used to track requirements, schedules and tentative budgets for all Army installation cleanup programs.

All site-specific funding and schedule information has been prepared according to projected overall Army funding levels and is, therefore, subject to change.

The following agencies contributed to the formulation and completion of this Installation Action Plan during a planning workshop held on 19 April 2006.

Company/Installation/Branch
Engineering & Environment, Inc. for USAEC
USAEC
US Army/Fort Hamilton/DPW Environmental Division

Acronyms & Abbreviations

AEDB-R	Army Environmental Database - Restoration (formerly DSERTS)
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CTC	Cost to Complete
DD	Decision Document
DERA	Defense Environmental Restoration Account (now ER,A)
DERP	Defense Environmental Restoration Program
DMM	Discarded Military Munitions
DoD	Department of Defense
DSERTS	Defense Site Environmental Restoration Tracking System (now AEDB-R)
ER,A	Environmental Restoration, Army (formerly called DERA)
FS	Feasibility Study
FY	Fiscal Year
HRR	Historical Records Review
IAP	Installation Action Plan
IMA	Installation Management Agency
IRA	Interim Remedial Action
IRP	Installation Restoration Program
LTM	Long-Term Monitoring
MC	Munitions Constituents
MEC	Munitions and Explosives of Concern
MMRP	Military Munitions Response Program
NPL	National Priorities List
NYSDEC	New York State Department of Environmental Conservation
PA	Preliminary Assessment
ppm	Parts Per Million
PW	Public Works
PY	Prior Year
RA	Remedial Action
RAB	Restoration Advisory Board
RC	Response Complete
RD	Remedial Design
REM	Removal
RI	Remedial Investigation
RIP	Remedy in Place
ROD	Record of Decision
RRSE	Relative Risk Site Evaluation
SI	Site Inspection
SVOC	Semi-Volatile Organic Compounds
TBD	To Be Determined
TRC	Technical Review Committee
USAEC	United States Army Environmental Center
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
UXO	Unexploded Ordnance
VOC	Volatile Organic Compounds

Installation Information

Installation Locale: Historic Fort Hamilton is located in the south western corner of Brooklyn, New York surrounded by the communities of Bay Ridge, Dyker Heights and Bensonhurst. The cornerstone of this coastal defense fort was set in 1825 and the first garrison flag was raised in 1831. While many of the original structures are gone, some having yielded to the construction of the Verrazano Narrows Bridge, part of the old fort remains on the grounds of the United States Army Fort Hamilton Garrison. Colonels Row, the Fort Hamilton Community Club, Lee House and the Harbor Defense Museum are on the National Register of Historic Places. The historic museum is located in the caponier of the old fort and is virtually untouched.

Installation Mission: The US Army Garrison Fort Hamilton provides effective and efficient management of government resources to support mission readiness, improve infrastructure, preserve the environment, and enable the well-being and safety of service members, civilians, and family members.

Lead Organization: Installation Management Agency, Northeast Region

Lead Executing Agency: USAEC

Regulatory Participation:
Federal: US EPA, Region II
State: New York State Department of Environmental Conservation (NYSDEC)

National Priorities List (NPL) Status: Not on NPL

Installation Restoration Advisory Board (RAB)/Technical Review Committee (TRC)/Technical Assistance for Public Participation (TAPP) Status: No RAB has been established at this time.

Installation Program Summaries
MMRP
Primary Contaminants of Concern: UXO
Affected Media of Concern: Soil
Estimated date for RIP/RC: 2015
Funding to date (up to FY05): $0
Current year funding (FY06): $0
Cost-to-Complete (2007+): $4,258,000

Installation Historic Activity

On June 11, 1825 the cornerstone was laid on for Fort Hamilton.

1831, Battery F, 4th Artillery leaves Governors Island with two officers and fifty-two enlisted men and becomes Fort Hamilton's first garrison.

1839, The 27th Regiment, New York Militia, found a home at Fort Hamilton and began training. The post became the first National Guard Training Camp in the United States. President Martin Van Buren visited on July 4th 1839.

1861-1865, During the Civil War, Fort Hamilton was a training site for volunteer regiments and the post strength reached as high as 1000 enlisted men. Troops from the fort helped to quell the great draft riots in Manhattan.

1898-1903, The old waterside casemated defenses of the fort are destroyed to make way for new armaments. New rapid fire breech loading mortars and guns, including 12" disappearing rifles, as well as electrically detonated mines controlled from Fort Hamilton, made it the most powerful seacoast fort in the New York Harbor.

1917-1918, During World War One the post became a processing point for hundreds of thousands of American soldiers going to France. During World War I, Fort Hamilton, now equipped with new breech-loading anti-ship guns, mortars and electric mines, served as a training, embarkation and separation center, a role it again played during World War II. Between the wars it became an infantry center, as a new generation of coastal artillery able to engage ships from greater distances was installed farther away from the city.

1922, The 18th Infantry Regiment and headquarters of the 1st Infantry Division are stationed at Fort Hamilton.

1942, Over three million soldiers were processed through the New York Port of Embarkation for transport to Europe in World War Two and at the close of hostilities Fort Hamilton also served as point of discharge for millions of returning troops.

1949, Fort Hamilton is placed under 1st Army control.

1950, During the Korean War, United Nations troops were staged, processed and shipped from Fort Hamilton.

1959-1964, Construction of the Verrazano Bridge required the destruction of Fort Hamilton's parade ground and most of her turn of the century brick barracks.

1974, The old fortress is designated a National Historic Landmark.

1976, New York City Recruiting Battalion established at Fort Hamilton.

1998, Military District of Washington takes over command of Fort Hamilton.

2002, The Installation Management Agency began overseeing all facets of Fort Hamilton's Installation Management, such as construction, family care, food management, environmental programs, well being, logistics, public works and installation funding.

Today Fort Hamilton is the US Army's ambassador to the New York City serving 5000 full time active duty personnel, 126 Army Reserve units, 100,000 military retirees and numerous Department of the Defense (DoD) agencies throughout the greater New York City metropolitan area.

MMRP

- Future Plan of Action: The installation plans to complete the Supplemental SI and Remedial Investigations/ Feasibility Studies (RI/FS) by 2008 and execute follow on phases/actions as required in the individual site cleanup strategies.

FORT HAMILTON

Military Munitions Response Program

MMRP Summary

Total AEDB-R MMRP Sites/AEDB-R sites with Response Complete: 5/0

AEDB-R Site Types
3 UXO; 2 Small Arms Range

Most Widespread Contaminants of Concern: UXO

Media of Concern: Soil

Completed REM/IRA/RA:
None

Total MMRP Funding

Prior years (up to FY05):	$0
Current Year (FY06):	$0
Future Requirements (FY07+):	$4,258,000
Total:	$4,258,000

Duration of MMRP
Year of MMRP Inception: 2002
Year of MMRP RIP/RC: 2015
Year of MMRP Completion Including LTM: 2015

MMRP Contamination Assessment Overview:

SMALL ARMS

Army and DoD experience indicates that contamination on small arms ranges is primarily lead in soils and that remediation of these sites would primarily consist of excavation, off-site transportation, stabilization, and disposal. No MEC components would be expected at small arms ranges; therefore, they are not included in the estimate. Although the types of small arms ranges and patterns of contamination can vary, assumptions for this Cost to Complete (CTC) estimate were based on the characteristics of a typical pistol and/or rifle MMRP range.

Typical dimensions and layout of an outdoor pistol and rifle range were obtained from MIL-HDBK-1027/3B (*Range Facilities and Miscellaneous Training Facilities other than Buildings,* June 1995*)* which provides recommended dimensions for range width, length, and impact berm design. The default suite of phases used for estimating costs for these sites includes:

MEC Phases: Historical Records Review

MC Phases: SI, RI/FS, RD, Remediation of soil

Historical Records Review (HRR)

HRRs are not typically performed separately for each site at an installation -- one HRR is typically performed per installation. Therefore, the cost for only one HRR was estimated per installation.

Site Inspection (SI)

All of the available RACER elements of an SI were selected as defaults. The site-specific assumptions that were required included the identification of the media to be sampled and the number of samples. The primary purpose of the SI is to confirm the presence or absence of munitions constituents. Numbers of soil samples included are shown below:

Site Inspection Surface Soil Samples

Range Size (acres)/Media	0 - 5	6-20	21-50	51-100	101 - 200	>200
No. of Locations	10	15	20	30	45	60
No. of Samples/Location	1	1	1	1	1	1
No. Rounds	1	1	1	1	1	1

As with the HRR, the Army typically funds and performs SIs for the installation as a whole. For installations with several or very large sites, it was determined that estimating an SI cost for each site produced a cost in excess of the Army's experience in performing these studies. For this reason, for many installations, an SI cost was not estimated for all sites, but for a sufficient number
of sites to reflect the expected cost of a facility-wide SI. At water sites, sediment was sampled instead of soil.

Remedial Investigation (RI)
All of the available RACER components of an RI were selected. The determination of the extent of contamination in all media is required in order to perform the risk assessment and evaluate remediation alternatives should they be required. It was assumed, therefore, that sampling would be performed in groundwater and in surface and subsurface soils. The table presents the media sampling assumptions. If a small arms site was a water range, the only difference in RI estimating approach was that surface water and sediment samples were substituted for surface and subsurface soil samples and no groundwater sampling was conducted.

Remedial Investigation Media Samples

Range Size (acres)/Media	0 - 5	6-20	21-50	51-100	101-200	>200
Groundwater						
Ave. Depth (ft.)	50	50	50	50	50	50
No. of Locations	5	5	5	5	5	5
No. of Samples/Location	5	5	5	5	5	5
No. Rounds	2	2	2	2	2	2
Surface Soil						
No. of Locations	20	30	40	60	90	120
No. of Samples/Location	1	1	1	1	1	1
No. Rounds	1	1	1	1	1	1
Subsurface Soil						
Ave. Depth (ft.)	2	2	2	2	2	2
No. of Locations	20	30	40	60	90	120
No. of Samples/Location	3	3	3	3	3	3
No. Rounds	1	1	1	1	1	1

Feasibility Study (FS)
The FS for small arms ranges was estimated to have all the usual components included in the RACER model, which include: scoping, development and screening of alternatives, analysis of alternatives, and remedy selection. Level of complexity was assumed to be moderate.

Remedial Design (RD)
RACER calculates RD cost as a percentage of RA Cost. The percentage method was selected for ex-situ technologies.

Remedial Action (RA)
The RA selected for small arms ranges was the excavation of lead-contaminated soil and transportation and disposal at an off-site facility with stabilization. This requires the use of two RACER technology models, one for excavation and a second for off-site transportation and disposal. The primary cost driver and most significant unknown for estimates with these technologies are the dimensions of the excavation and the associated volume of lead-contaminated soil. Soil excavation volumes were based on site size. The assumptions used are as follows:

- Ranges 0 – 5 Acres: 333 yd^3 of contaminated soil
- Ranges 6 – 20 Acres: 666 yd^3 of contaminated soil
- Ranges 21 – 50 Acres: 999 yd^3 of contaminated soil
- Ranges 51 – 100 Acres: 1,000 yd^3 of contaminated soil
- Ranges 101 – 200 Acres: 2,000 yd^3 of contaminated soil
- Ranges > 200 Acres: 4,000 yd^3 of contaminated soil

MULTI-USE RANGES & SITES

A Multi-Use Site is a range or site where UXO or DMM is potentially present. A MEC removal action, in addition to remediation of MC, is potentially required. The default suite of technologies used for estimating costs for these sites includes:

MEC Phases: HRR, RI/FS, RD, Remediation (UXO & DMM), Institutional Controls, Monitoring

MC Phases: SI, RI/FS, RD, Remediation (Soil)

The key assumptions by technology are described below. Only the new phases are described below.

MEC RI/FS - In RACER, the primary decision when doing a MEC RI/FS is determining the % of the site to study. We chose to characterize the entire sites using a statistical sampling approach.

MEC RA - To cost the cleanup of UXO and DMM at a site, we assumed that 35% of site's acreage would be subject to MEC removal to a 4-ft depth.

MEC Institutional Controls (IC) - MEC IC consists of using land-use controls and public education programs.

MEC Monitoring (LTM) - Monitoring frequency to determine the protectiveness of the MEC removal is six events over 30 years, or one event every five years. If needed, the MC 5 year review is also part of this review.

MMRP Cleanup Exit Strategy

Fort Hamilton has submitted a MEMORANDUM requesting that the SI and RI/FS projects for FTHM-001-R-01 through FTHM-004-R-01 be deleted from future requirements and the site be placed in a Response Complete status. Further investigation will be determined upon completion of SI for site FTHM-005-R-01.

2003

- "Closed, Transferring and Transferred Range/Site Inventory Report," Prepared by: Malcolm Pirnie, Inc., 300 E. Lombard St., Suite 610, Baltimore, MD 21202, Dec

FORT HAMILTON

Military Munitions Response Program

Site Descriptions

FTHM-001-R-01
HAMILTON CLOSED COMPLEX

SITE DESCRIPTION

This range complex contains all closed ranges inside Fort Hamilton. It includes eleven battery firing points, a parade ground, and a training field. The range complex occupies 42 acres. The batteries were used for defense and training purposes between 1860-1941. Munitions used at the batteries were most likely shells filled with black powder and sized for its guns. The battery structures no longer exist. Any munitions fired from the batteries would be found inside the firing fan, which extends into the waters of New York Harbor. The parade ground and the training field were used for maneuvers and small arms training. The parade ground was used from 1900 to 1964. The training field was used from 1892 to 1950. Current uses on the property include installation housing, tennis courts, parking lots, baseball fields, and undeveloped land. No documents were found to indicate any UXO investigations and/or responses were performed on the range complex areas. The Fort Hamilton batteries included in this range complex are: Brown, Burke, Doubleday, Gillmore, Griffin, Johnson, Livingston, Mendenhall, Neary, Piper, and Spear.

STATUS

REGULATORY DRIVER: CERCLA

RAC Score: 2 - Serious

CONTAMINANTS OF CONCERN: UXO

MEDIA OF CONCERN: Soil

Phases	Start	End
PA	200212	200311
SI	200510	200609
RI/FS	200910	201009

RC DATE: 201110

CLEANUP STRATEGY

Fort Hamilton has submitted a MEMORANDUM requesting that the SI and RI/FS projects for FTHM-001-R-01 be deleted from future requirements and the site be placed in a Response Complete status.

FTHM-002-R-01
HAMILTON PARADE GROUND #1

SITE DESCRIPTION

This range is a 15-acre area where maneuvers and potentially small arms training occurred. This transferred range is located outside the northwestern corner of the Fort Hamilton installation boundary. The parade ground was used from 1900 to 1964. The munitions used inside this range would be small arms ammunition. It now lies under the Verrazano Bridge's supports and ramps. No documents were found to indicate any UXO investigations and/or responses were performed on the Hamilton Parade Ground #1.

STATUS

REGULATORY DRIVER: CERCLA

RAC Score: 5 - Negligible

CONTAMINANTS OF CONCERN: UXO

MEDIA OF CONCERN: Soil

Phases	Start	End
PA	200212	200311
SI	200606	200709

RC DATE: 200709

CLEANUP STRATEGY

Fort Hamilton has submitted a MEMORANDUM requesting that the SI and RI/FS projects for FTHM-002-R-01 be deleted from future requirements and the site be placed in a Response Complete status.

FTHM-003-R-01
HAMILTON TRAINING FIELD

SITE DESCRIPTION

This range is a five-acre area that was used for maneuver exercises and to train soldiers with small arms. It could accommodate 500-yard firing, but due to its proximity to civilian housing, the firing range was reduced to 300 yards. This transferred range is located outside the northeastern corner of the Fort Hamilton installation boundary. The training field was used from 1892 to 1950. The munitions used were small arms ammunition. This portion of the training field (the closed part is under the Hamilton Closed Complex) is covered by the Veteran Administration's Hospital, which was constructed in the 1950s. No documents were found to indicate any UXO investigations and/or responses were performed on the Hamilton Training Field.

STATUS

REGULATORY DRIVER: CERCLA

RAC Score: 5 - Negligible

CONTAMINANTS OF CONCERN: UXO

MEDIA OF CONCERN: Soil

Phases	Start	End
PA	200212	200311
SI	200606	200709

RC DATE: 200709

CLEANUP STRATEGY

Fort Hamilton has submitted a MEMORANDUM requesting that the SI and RI/FS projects for FTHM-003-R-01 be deleted from future requirements and the site be placed in a Response Complete status.

FTHM-004-R-01
HAMILTON TRANSFERRED COMPLEX

SITE DESCRIPTION

This range complex includes ten battery firing fans. The range complex occupies 609 acres. The batteries were used for defense and training purposes between 1860-1941. Munitions used at the batteries were most likely shells filled with black powder and sized for their guns. The battery structures no longer exist. Any munitions fired from the batteries would be found inside the firing fans, which extend into the waters of New York Harbor. Current uses of this complex include sections of the Belt Parkway, a parking lot, and housing complexes. No documents were found to indicate any UXO investigations and/or responses were performed on the range complex areas. The Fort Hamilton battery firing fans covered under this range complex are: Burke, Doubleday, Gillmore, Griffin, Johnson, Livingston, Mendenhall, Neary, Piper, and Spear.

STATUS

REGULATORY DRIVER: CERCLA

RAC Score: 2 - Serious

CONTAMINANTS OF CONCERN: UXO

MEDIA OF CONCERN: Soil

Phases	Start	End
PA	200212	200311
SI	200606	200709
RI/FS	200910	201009

RC DATE: 201209

CLEANUP STRATEGY

Fort Hamilton has submitted a MEMORANDUM requesting that the SI and RI/FS projects for FTHM-004-R-01 be deleted from future requirements and the site be placed in a Response Complete status.

FTHM-005-R-01
HAMILTON TRANSFERRED-OW

SITE DESCRIPTION

This range complex contains all battery firing fans located over the water associated with Fort Hamilton. The range complex occupies 2,174 acres. The batteries were used for defense and training purposes between 1860-1941. Munitions used at the batteries were most likely shells filled with black powder and sized for their guns. The battery structures no longer exist. Any munitions fired from the batteries would be found inside the firing fans, which extend into the waters of New York Harbor. No documents were found to indicate any UXO investigations and/or responses were performed on the range complex areas. The area is currently used for recreational and commercial shipping purposes

STATUS

REGULATORY DRIVER: CERCLA

RAC Score: 1 - High

CONTAMINANTS OF CONCERN: UXO

MEDIA OF CONCERN: Soil

Phases	Start	End
PA	200212	200311
SI	200606	200709
RI/FS	200910	201009

RC DATE: 201109

CLEANUP STRATEGY

Further site investigations will determine remediation type.

MMRP Schedule

Initiation of MMRP: 2002

Projected ROD/DD Approval Dates: 2015

Projected Construction Completion: 2015

Schedule for Five Year Reviews: TBD

Estimated Completion Date of MMRP including LTM: 2011

Fort Hamilton MMRP Schedule

(Based on current funding constraints)

AEDB-R#	Phase	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15+
FTMH-001-R-01	RI/FS									
FTMH-004-R-01	RI/FS									
FTMH-005-R-01	RI/FS									

Prior Years Funds

Total Funding up to FY04: $0

FY05

Site Information	Expenditures	FY Total
	$0	**$0**

Total Prior Year Funds: $0

Current Year (FY06) Requirements

Site Information	Requirements	FY Total
	$0	**$0**

Total Future Requirements: **$4,258K**

Total Program Cost *(from inception to completion of the MMRP):* **$4,258K**

Community Involvement

The public will be surveyed about the MMRP program in the future. To be determined by the dates for the SI phase. No RAB has been established at this time.